ID der Kurzfassung : **260**

Toxoplasma gondii attenuated by low energy electron irradiation induces protective immune responses

Inhalt

Vaccines against parasites must elicit immune responses against antigens present in different life cycle stages to provide sufficient immunity against infection. Attenuation of parasites is therefore a promising strategy, since they retain enough virulence to cause subclinical infection as well as metabolic activity to change their antigen composition.
Low energy electron irradiation (LEEI) is a novel approach for attenuating parasites. LEEI damages nucleic acids while antigen structures remain largely intact. LEEI offers advantages compared to other radiation technologies including precise dosing, reproducibility, a fast process and safety. It can be integrated into standard and GMP-compliant laboratories, requiring only minimal shielding constructions.
We have developed a microfluidic-based LEEI process to attenuate *Toxoplasma gondii*, an important zoonotic parasite. *In vitro* analysis showed that the parasites could invade host cells but were impaired in their intracellular replication after LEEI. Suitable doses and process parameters for reproducible attenuation were identified. An immunization study in mice was conducted, comparing different LEEI-doses with chemically inactivated material. LEEI-attenuated tachyzoites elicited high levels of antibodies after immunization and protected the animals from acute infection. These results imply that LEEI is a valuable technology for attenuation of parasites and form the base for further development of anti-parasitic vaccines.

Keywords

Toxoplasma gondii, Irradiation, Attenuation, Vaccine

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Yes, I am a Junior Scientist.

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